occurred. In such localities, reproduction is gradually beginning to take place.

In no other portion of Montana do we have a zone of injury comparable to that surrounding the Washoe smelter at Anaconda, where radiating from a central point, the injury decreases gradually outward in every direction from a common center. In this region where variation in the bands of injury occur, they can be shown to be due to the tendency of the clouds of smoke in damp weather either to settle in the valleys or to follow the easiest channels of surface configuration, here thrown against a slope, and there deflected away by striking a protected slope or valley.

Acknowledgment should be made to Messrs. W. B. Greeley, assistant forester, and F. A. Silcox, district forester of District No. 1 of the Forest Service, for their courtesy in securing data on the time of occurrence of the Red Belt injury of 1908–9, its scope, and extent; and to Messrs. J. F. Preston, D. T. Conkling, D. T. Mason, R. P. McLaughlin, C. W. Hudson, forest supervisors, and others of the forest service who contributed the data just mentioned.

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THE GENUS HAMELIA JACQ.

By N. L. Britton

Mr. H. F. Wernham has recently contributed to the Journal of Botany* a very useful account of *Hamelia*, a genus of Rubiaceae, comprising, according to his studies, twenty-eight species, all American, ranging from Florida and Mexico to Paraguay.

Of the twenty-eight species recognized, the following are described as new:

H. magniloba. Nicaragua.

H. grandiflora Spruce. Chimborazo.

* Jour. Bot. **49**: 206–216. Jl 1911. A supplementary note, loc. cit. 346. N 1911.

H. magnifolia. Costa Rica.

H. ovata. Venezuela.

H. Rovirosae. Tabasco; Guatemala.

H. pedicellata. Colombia; Venezuela; Trinidad; Dominica; St. Vincent.

H. tubiflora. Colombia.

H. viridifolia. Costa Rica.

H. brachystemon. New Grenada.

H. Brittoniana. Costa Rica.

Hamelia axillaris Sw. of Jamaica, reduced by Grisebach to *H. lutea* Rohr, is maintained as a species, on the evidence of the specimens collected long ago by Swartz and by W. Wright, preserved in the herbarium of the British Museum, but this does not appear to be conclusive, and *axillaris* is the older name. For this species Mr. Wernham cites also *Tonduz 9998* in the Kew Herbarium, but this is from Costa Rica not Jamaica.

H. pedicellata Wernham does not appear to be certainly distinct from *H. erecta* Jacq. (*H. patens* Jacq. a posterior name) from which it is separated by its scanty pubescence and "mostly" pedicelled flowers; but some of the flowers of *H. erecta* are often pedicelled, and as Mr. Wernham remarks, the pubescence of *erecta* is a very variable quantity.

To the genus may be added:

Hamelia scabrida sp. nov.

A small tree, 4 m. high. Leaves opposite, or those of small twigs whorled in 3's, broadly ovate, rather firm in texture, the blade 10 cm. long or less, short-acuminate at the apex, rounded or narrowed at the base, scabrate with numerous scattered short conic papillae on the upper surface, pubescent and with some similar papillae on the veins beneath; veins about 7 on each side of the midrib, widely ascending; petioles 2 cm. long or less; stipules triangular, subulate-tipped; flowers sessile or short-pedicelled, secund on the branches of terminal forking cymes; calyx campanulate, glabrous, 3–4 mm. long, its teeth triangular, abruptly subulate-tipped, 1–1.5 mm. long; corolla yellow, narrowly funnelform, 3–4 cm. long, its lobes 3 mm. long, obtuse; stamens and style very nearly as long as the corolla; berry oblong, 10–14 mm. long, 8–9 mm. in diameter; seeds 1 mm. long, shining, distinctly minutely tuberculate.

Rocky thicket, Fairfield, Parish of Manchester, Jamaica, September 3–7, 1909 (*Britton 3147*).

In Mr. Wernham's arrangement this comes next to *H. ventricosa* Sw., and is, in fact, nearest related to that species, which has different foliage, larger corolla and much smaller seeds.

The leaves of *H. scabrida* are quite as papillose as those of *H. papillosa* Urban of the Jamaica Cockpit Country, which has very much smaller flowers and globose fruits over 1 cm. in diameter.

FOSSIL FLOWERS AND FRUITS.—II

By T. D. A. Cockerell

The genus *Robinia* was formerly distributed over the Palaearctic region, as shown by a number of well-preserved fossils in the European Tertiary. A species (*R. arvernensis* Laurent) flourished in south-central France as late as the "Mio-pliocene." Probably the genus died out in Europe during the glacial period. At the present time conditions are well suited to *R. pseudacacia*, which has run wild extensively. In America, we have a species (*R. Brittoni* Ckll.) from the Florissant Miocene but it might have been supposed that the genus was really of Old World origin, and came over to America in Miocene times. Such an idea seems to be negatived by the discovery of pods of an apparently genuine *Robinia* in the Laramie Cretaceous.

Robinia mesozoica n. sp.

Pods of the same size and general appearance as those of the modern *R. pseudacacia* L.; base moderately tapering; apex with a short oblique point but otherwise rather obtuse; breadth of a large pod 14 mm., of a smaller but apparently mature one 10; wing-margin very distinct, nearly 3 mm. broad in the larger pod; seeds placed almost transversely, the obliquity very slight, as in the modern *R. pseudacacia*. Neither pod shows the whole length.

Collected by Mr. N. E. Hinds in sandstone, south side of a yellow cliff a few miles north of Whitely Peak, which is about